

What is Claimed is:

1. A method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines, comprising:

- a) providing at least a first optical line and a second optical line;
- 5 b) initializing the first optical line and the second optical line respectively as an operational line and a protection line;
- c) determining optical strength at least in the operational line;
- d) determining performance at least in the operational line; and
- e) designating the first optical line and the second optical line respectively as the
10 protection line and the operational line based upon any combination of the optical strength and the performance of the first optical line and the second optical line.

2. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein the performance is determined in
15 both the first optical line and the second optical line.

3. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein the optical strength is determined in both the first optical line and the second optical line.

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4. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein the performance is determined in the protection line before said step e).

5. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein the optical strength is determined in the protection line before said step e).
- 5 6. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein the performance is determined in the operational line after said step e).
- 10 7. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein the optical strength is determined in the operational line after said step e).
- 15 8. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein the performance is determined in the protection line after said step e).
9. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 8 further comprising:
- f) designating back the first optical line and the second optical line respectively
- 20 as the operational line and the protection line based upon the performance of the protection line.

10. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein the optical strength is determined in the protection line after said switching.

5 11. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 10 further comprising:

g) designating back the first optical line and the second optical line respectively as the operational line and the protection line based upon the optical strength of the protection line.

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12. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 further comprising:

h) storing data on the optical strength and the performance.

15 13. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 12 wherein repeating said steps c) through e) in response to a request and i) reporting the stored data.

14. The method of monitoring optical signal in a plurality of optical lines for selecting
20 one of the optical lines according to claim 1 wherein said designating is optical switching between the first optical line and the second optical line.

15. The method of monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 1 wherein said designating is optical blocking one of the first optical line and the second optical line.

5 16. A system for monitoring optical signal in a plurality of optical lines for selecting one of the optical lines, comprising:

at least a first optical line and a second optical line;

an optical line selector for selecting one of the first optical line and the second optical line;

10 a first control unit connected to said optical line selector for generating a selection signal indicative of selecting the first optical signal and the second optical signal, said first control unit initializing the selection signal indicative of selecting the first optical line and the second optical line respectively as an operational line and a protection line;

15 an optical detector connected to at least the operational line for determining optical strength in the operational line; and

an optical performance monitor connected to at least the operational line for determining performance in the operational line, wherein said first control unit further connected to said optical detector and said optical performance monitor for generating
20 the selection signal indicative of the first optical line and the second optical line respectively as the protection line and the operational line based upon any combination of the optical strength and the performance of the first optical line and the second optical line.

17. The system for monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 16 wherein an independent one of said optical performance monitor is connected to both the first optical line and the second optical line.

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18. The system for monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 17 wherein an independent one of said optical detector is connected to both the first optical line and the second optical line.

10 19. The system for monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 18 further comprising a second control unit connected to said first control unit for initiating the generation of the selection signal.

20 20. The system for monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 19 wherein said first control unit in response to said second control unit generates the selection signal indicative of the first optical line and the second optical line respectively as the protection line and the operational line and subsequently also generates the selection signal indicative of the first optical line and the second optical line respectively as the operational line and the protection line.

21. The system for monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 19 wherein said first control unit in response to said second control unit generates the selection signal indicative of the first optical

line and the second optical line respectively as the protection line and the operational line.

22. The system for monitoring optical signal in a plurality of optical lines for selecting
5 one of the optical lines according to claim 18 further comprising a memory unit for storing data on the optical strength and the performance, said first control units reading the stored data from said memory unit to send the stored data to said second control unit.

10 23. The system for monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 16 wherein said optical line selector is an optical switch.

15 24. The system for monitoring optical signal in a plurality of optical lines for selecting one of the optical lines according to claim 16 wherein said optical line selector is an optical blocking device.

25. An optical line selector package for selecting one of a plurality of optical lines, comprising:
20 an optical line selector connected to the plurality of input optical lines at an input side as well as at least one output optical line at an output side;
an optical line performance monitor connected to the output optical line for monitoring a predetermined set of performance characteristics in the optical lines at the

output side of said optical line selector, said optical line performance monitor
generating a performance signal indicative of the performance characteristics;

- 5 a selector control unit connected to said optical line performance monitor to
generate a selector drive signal at least based upon the performance signal, the selector
drive signal being indicative of a current selection of the input optical lines; and
 wherein said optical line selector further connected to said selector control unit
for selecting one of the input optical lines based upon the selector drive signal.

26. The optical line selector package for selecting one of a plurality of optical lines
10 according to claim 25 further comprising:

- an optical detector connected to one of the optical lines for detecting optical
strength of the optical lines, said optical detector generating an optical strength signal
indicative of the optical strength, wherein said selector control unit further connected to
said optical detector for generating the selector drive signal based upon both the
15 performance signal and the optical strength signal.

27. The optical line selector package for selecting one of a plurality of optical lines
according to claim 25 further comprising:

- a monitor port connected to at least one of the input lines for monitoring the
20 input lines.

28. The optical line selector package for selecting one of a plurality of optical lines
according to claim 25 further comprising:

a monitor port connected to at least one of the output lines for monitoring the output lines.

29. The optical line selector package for selecting one of a plurality of optical lines
5 according to claim 25 further comprising:

a LED unit connected to said selector control unit for indicating the current selection of the input optical lines.